Sharja, Sohar, Matrah, Maskat, and their neighbourhood. But during the last week of March, 1863, when re-embarking at Matrah for Aboo-Shahr, on the Persian Gulf, I was attacked by a malignant fever, and only owed my recovery and ultimate return to Bagdad about the end of April to the kind attentions and generous care of Captain Selby of the Indian navy.

IX.—*Notes on the Physical Geography of Vancouver Island.*

By C. FORBES, Esq., M.D.

Read, March 14, 1864.

THE object of the present Paper is to deal especially with Vancouver Island; but so close is the connexion between this and the sister colony of British Columbia, that it will be impossible, in treating of the Physical Geography and resources of the one, to avoid referring to those of the other.

In reference to Vancouver Island, the points which naturally suggest themselves for consideration are—

Geographical Position and General Aspect.
Geological Formation and Hydrography.
Climate, Soils, and Resources, generally derivable from Commercial Relations, and Natural Products; and, incidentally,
The Position of the Colony in its Political Relations.

Vancouver Island, first made known to us by Cook, is situated on the coast of North-Western America, between the latitudes of 48° 20″ and 51° N.; and the longitudes of 123° and 128° W. It is separated on the south from Washington territory by the Strait of Fuca, and on the east from British Columbia by the Straits of Georgia, and by Johnstone Strait. Its shores on the west are washed by the waters of the North Pacific. Essentially a mountain ridge, its buttress-like walls descend for the most part abruptly to the shore, fringed, however, in many places, more especially on its south-eastern and eastern sides, by the undulating country, thickly wooded in general, but here and there containing patches of open grass-land.

The island is of an elongated oblong form, nearly 300 miles in length, by from 30 to 50 in average breadth, attaining, at Mount Arrowsmith, an elevation of 5900 feet. Its outline is boldly picturesque; its shores are characterised by abrupt cliffs, rocky promontories, sheltered coves, pebbly beaches, and fine harbours.

The whole western side presents a gloomy, frowning aspect. Numerous arms of the sea, fiord-like in character, penetrate between the walls of metamorphic and trappean rock, which, on either hand, rising into lofty peaks and ranging into broken sierras, or sloping


MAP OF
VANCOUVER ISLAND
to illustrate the Paper of
Dr. C. Forbes, R.N.
English Miles
10 20 30 40 50
129
128
127
126
51
50
49
48
NORTH PACIFIC OCEAN
QUEEN CHARLOTTE SOUND
Scott Islands
Scott Channel
Triangle I.
W. Haycock
E. Haycock
Lanz I.
Cox I.
C. Scott
C. Commerell
Nahwitte Cone
Shushartie B.
Shushartie Saddle
Hope I.
Mexicana Pt.
Bull Hr.
Shadwell Passage
Galiano I.
Goletas Channel
North Chan.
New Channel
Gordon Group
Duval Pt.
Hardy B.
Branham I.
Broughton I.
Wells Pas.
Fife Sound
Beaver Hr.
The Seven Hills
Fort Rupert
False Hr.
Broughton Str.
Malcolm I.
Port McNeill
Cormorant I.
Hanson I.
Port Harvey
Havannah Chan.
Call Creek
Johnstone Strait
Port Neville
Hardwicke I.
Franklin Range
Newcastle Range
Mt. Palmerston
Salmon R. or H'kusam
Prince of Wales Range
Knights
C. Russell
Sea Otter Cove
San Josef B.
C. Palmerston
Raft Cove
Top Knot Pt.
Browning Cr.
Rugged Pt.
Entrance Mt.
QUATSINO SOUND
Forward Inlet
Nose Pk.
West Arm
Coal Hr.
Rupert Arm
Hecate Cove
Koprino Harb.
Marble Cr.
Quatsino Narrows
South East Arm
Twin Peaks
Oheslakee
Nimpkish
Beaver Cove
Table Mtn.
Holdsworth
Mt. Castle
Karmutzen Lake
Rankin Range
Klaanch R.
Kleetsit L.
Mt. Karmutsen
Anutz L.
Hooston L.
Atluck L.
Surf Pt.
Reef Pt.
Lawn Pt.
Open B.
Klaskino Inlet
Brooks Bay
Klaskish Inlet
C. Cook or Woody Pt.
Solander I.
Snow Saddle
Garibaldi Peaks
Kokshittle Arm
Tahsish
Tahsis Arm
Nasparte Inlet
Ou-ou-kinsh Inlet
Bunsby I.
Barrier Is.
Table I.
Blind Entrance
Fair Harb.
Narrow Gut
KYUQUOT SOUND
Rugged Pt.
Tatchu Pt.
Catala I.
North Channel
ESPERANZA INLET
Middle Channel
Nuchatlitz Inl.
Nootka I.
Louie Cr.
Kendrick Arm
Inner Basin
Tahsis Ch.
Head B.
Deserted Cr.
Tlupana Arm
Bligh I.
Cove I.
Guaquina or Mt. Gold R.
King Passage
Camp B.
Bajo Pt.
Maquinna Pt.
NOOTKA SOUND
Burdwood Pt.
Escalante Pt.
Victoria Pk.
Crown Mtn.
Estevan Pt.
Hesquiat Hr.
Hesquiat Pt.
Refuge Cove
Sydney Inlet
Shelter Arm
Obstruction I.
North Arm
Rafael Pt.
North Channel
Bartlett I.
Ship Channel
Blunden I.
CLAYOQUOT SOUND
Broken Channel
Templar Channel
Portland Pt.
Schooner Cove
VANCOUVER

127
126
125
124
Broughton I.
Fife Sound
Knights Inlet
Malcolm I.
Broughton Str.
Hanson I.
Johnstone Strait
Call Creek
Havannah Chan.
Port Neville
Port Harvey
Cheslakee
Nimpkish
Beaver Cove
Table Mtn.
Holdsworth
Franklin Range
Mt. Castle
Hardwicke I.
Helmcken I.
Thurlow I.
Johnstone
Newcastle Range
Mt. Palmerston
Prince of Wales Range
Halifax Ra.
Chatham
Mt. Karmutsen
Kla anch R.
Kleetsit L.
Anutz L.
Hoostan L.
Garibaldi Peaks
Atluck L.
Tahsish
Tahsis Arm
Valdes I.
Menzies Mt.
Wilfred Pt.
Seymour Narrows
Menzies B.
Race Pt.
Duncan Pt.
Orange Pt.
Campbell R.
Redonda I.
Lewis Chl.
Mary I.
Bute Inlet
Stuart I.
Victoria Pk.
Fair Harb.
Crown Mtn.
Rugged Pk.
C. Mudge
Willow Pt.
Shelter Pt.
Orange Bay
Hernando I.
Savary I.
Harwood I.
Mt. Washington
Alexandra Pk.
Mt. Albert Edward
Mt. Becher
Royal Range
Catala I.
North Channel
Middle Channel
Nuchatlitz Inlet
Nootka I.
Kendrick Arm
Narrow
Louie Cr.
Langford
Inner Basin
Deserted
Head B.
Tlupana Arm
Gore I.
Guaquina or Muchalat R.
Muchalat Arm
Gold R.
King Passage
Camp B.
Bajo Pt.
Maquinna Pt.
Burdwood Pt.
Escalante Pt.
NOOTKA SOUND
Cape Lazo
Port Augusta
Sandy I.
Lambert Chl.
Hornby I.
Tribune B.
Texada I.
Sabine Chanl.
Malaspina Strait
Lasqueti I.
Bull Pass.
Thormanby I.
Jervis Inlet
Princess Louisa Inlet
Queens Reach
Princess R. Reach
Nelson I.
Pender Harb.
Sechelt
Salmon
Porpoise
Trail Isls.
Bartlett
STRAIT OF GEORGIA
Baynes Sound
Denman I.
Beaufort Range
Fanny B.
Deep B.
Qualicum
Ballinac Chl.
Ballinac Is.
Winchelsea Is.
Nanoose Harb.
North West B.
Departure B.
Nanaimo Harb.
Great Central Lake
(Said to be about 30 miles long)
Mt. Mark
Horne L.
Cameron
Mt. Arrowsmith
Mt. Moriarty
Mt. Benson or Wake Siah
Shelter Arm
Bedwell Sound
Estevan Pt.
Hesquiat
Refuge Cove
Sydney Inlet
Flores I.
Rafael Pt.
North Channel
Bartlett I.
Ship Channel
Warn B.
Deer Creek
Mt. Maitland
CLAYOQUOT SOUND
Broken Channel
Templar Channel
Mackenzie Ra.
Handsome Mt.
Turret Mt.
Toquart
Pipestem Inlet
Chesath
Sproat
Second Narrows
Alberni Canal
Mt. Hankin
First Narrows
Mt. Douglas
Mt. Spencer
Mt. Parsons
Mt. Grey
Nahmint
Mt. Hearty
Long B.
Schooner Cove
Portland Pt.
Florencia I.
Wreck B.
Amphitrite Pt.
Western Chl.
Middle Channel
Village
BARCLAY SOUND
Cape Beale
Pachena B.
Cowitchin Lake
Shelter Bight
Nitinat
Carmanah
Bonilla Pt.
Pandora Pk.
Gordon R.
Onusmah
Cooper Inlet
P. San Juan
Providence Cove
Sombrio R.
JUAN DE FUCA STRAIT
R. Jordan
Tatouch Is.
Light Ho.
Neeah B.
Cape Classet or Flattery
Callam B.
Sherringham Pt.
Sooke Inlet
Becher
Race
Granberry
Chemainos
Mt. Hayes
Mt. Nicholls
Stanton
Horseshoe B.
Mt. Prevost
Kokesailah
Sominos
VANCOUVER ISLAND
PACIFIC OCEAN
BRITISH
WASHINGTON


125
124
123
122
51
50
49
48
BRITISH COLUMBIA
STRAIT OF GEORGIA
WASHINGTON TERRITORY
Bridge R.
Seaton Lake
Anderson Lake
P. Anderson
R. Scaalux
Fraser R.
Pavilion L.
R. Chapeaux
Pemberton
Lillooet Lake
Green L.
Tenass L.
Port Douglas
Harrison Lake
Harrison R.
Redonda I.
Lewis Chl.
Princess Louisa Inlet
Queens Reach
Princess Rl. Reach
Jervis Inlet
Hernando I.
Savary I.
Harwood I.
Texada I.
Malaspina Strait
Sabine Chanl.
Nelson I.
Seechelt
Salmon Arm
Narrows Arm
Pender Harb.
Porpoise B.
Trail Isls.
Cape Lazo
Port Augusta
Sandy I.
Lambert Chl.
Hornby I.
Tribune B.
Lasqueti I.
Bull Pass
Thormanby Is.
Ballinac Is.
Ballinac Ch.
Winchelsea Is.
Squamisht R.
Howe Sound
Anvil I.
Gambier
Bowen I.
Keats
Bartleur Passage
Collingwood Chl.
Queen Charlotte Chl.
Burrard Inl.
Port Moody
North Arm
Pitt L.
Pitt R.
Pt. Grey
Sea I.
NEW WESTMINSTER
Derby, or New Langley
Old Langley
Sumass L.
Fraser R.
Mt. Mark
Horne L.
Cameron L.
Mt. Arrowsmith
North West B.
Nanoose Harbr.
Departure B.
Nanaimo Harb.
Gabriola
Flat Top Is.
Valdes I.
Mt. Moriarty
Mt. Benson or Wake Siah
Alberni Canal
Mt. Hankin
Mt. Douglas
First Narrows
Second Narrows
Mt. Spencer
Mt. Parsons
Mt. Grey
Granberry
Chemainos B.
Portier Pass
Galiano I.
Mt. Hayes
Mt. Nicholls
Stanton Pk.
Horseshoe B.
Thetis
Kuper
Stuart Channel
Active Pass
Montague Hr.
Roberts Pt.
Boundary Bay
Semiahmoo B.
Birch B.
Boundary between British Territory & the United States
Cowitchin Lake
Chemainus
Mt. Prevost
Maple B.
Sominos
Kokesailah
Hatch Pt.
Mill Creek B.
Mt. Wood
Finlayson Arm
Mt. McDonald
Saddle Mt.
VICTORIA
Baynes Chl.
Chatham Is.
Discovery I.
Plumper Pass
Esquimalt Harbour
Sooke Inlet
Becher Bay
Race Is.
Race Chl.
Smith or Blunt I.
Light Ho.
Satuma I.
Waldron
Orcas I.
San Juan I.
Shaw
Lopez
Blakely
Cypress
Guemes
Decatur I.
Middle Chan.
Rosario Strait
Bellingham Bay
Padilla B.
Fidalgo I.
Whidbey
Camano
Admiralty Inlet
Nitinat L.
Carmanah
Bonilla Pt.
Pandora Pk.
Gordon R.
Onismah
Cooper Inlet
P. San Juan
Providence Cove
Sombrio R.
R. Jordan
JUAN DE FUCA STRAIT
Sherringham Pt.
Callam B.
Tatouch Is.
Light Ho.
Neeah B.
Cape Classet, or Flattery
Freshwater B.
New Dungeness
Port Angelos
Protection I.
Wilson Pt.
Washington Harbr.
Port Discovery

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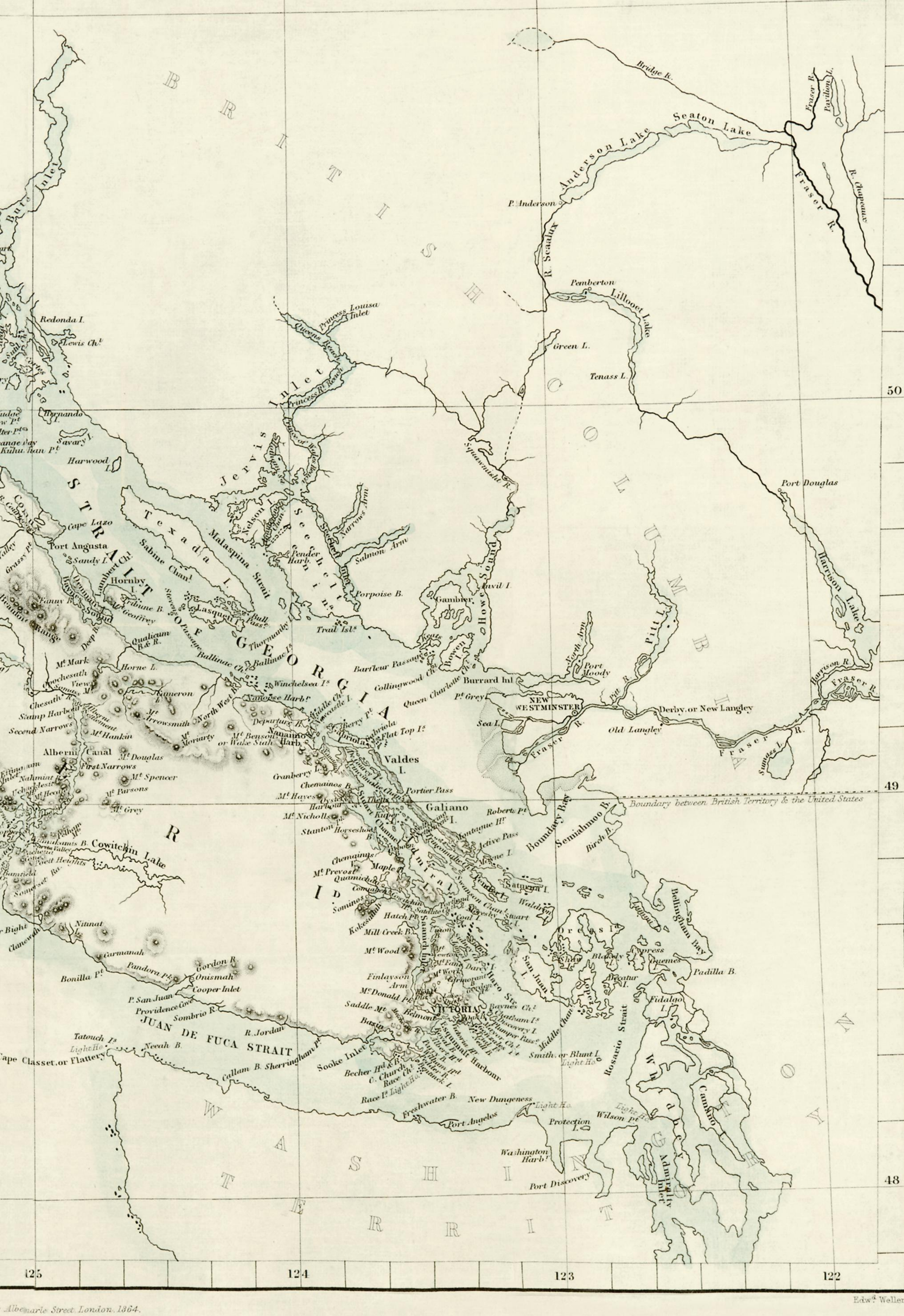

Albemarle Street London. 1864.

Edwd. Weller

from rounded dome-shaped masses, form the buttresses of the land, opposing and resisting the fury of an ocean, for the greater part of the year anything but pacific. Along the eastern side a more open and more undulating country marks the existence of underlying sedimentary rocks, which, in the form of carboniferous sandstones and limestones, at intervals fringe the coast.

The whole country is more or less densely wooded, excepting just where the summit of a mountain affords no hold for plants, or where, as in the neighbourhood of Sooke, Victoria, Cowitchin, and Comux, limited ranges of open grass-lands occur.

In the winter the tone of colouring of the landscape is sombre, the weathered rock-surfaces mingling their purple hues with the dark green foliage of the pine. But in the summer and autumn these heavy tones are lightened by the bright colours of numerous flowering plants; by the yellow-green light that trembles in the swampy hollows from the poplar, the alder, and the aspen; and, later in the season, by the rich orange and crimson tints of the maple. The surface is beautifully diversified by mountain precipice, hill and dale, wide-spreading lakes, and solitary tarns, cut up by numerous arms and inlets of the sea; in no case does the water-shed suffice to give a navigable stream. There are no rivers, in the stricter sense of the word, such streams as flow through the country being simply the short watercourses, which discharge the overflow of lakes or the surface-waters of the neighbouring ridges—torrents in winter, nearly dry in summer, valuable only as a power for driving grist and saw mills, and possibly at a future day to be rendered useful as a means of irrigation—a process by which many parts of the country would be much benefited.

As might be expected in a country having a clay subsoil and covered with material through which water readily percolates, springs are numerous and the water excellent. Where the clay, however, forms the surface-soil, some inconvenience is experienced, as in the neighbourhood of the town of Victoria.

The geological structure of the island may be briefly described as consisting of an axis of metamorphic gneissose rock, situated at the south-western extremity, having, resting thereon, clay-slates and other rocks, of probably Palæozoic age. A great deposit of these slaty rocks has existed along the whole south and west, but, in a great measure, shattered and broken up by intruded trappean rocks: it has been almost entirely removed by the glacial action which grooved and furrowed the dense crystalline felspathic traps. Associated with these are lenticular masses of a semicrystalline limestone, of great economic value. On these metamorphic and trappean masses rest the sedimentary stratified rocks, which fringe the south-eastern and eastern coast-lines, and which contain carboniferous strata of very great value. Presuming that the gneissic

axis of the island is of Silurian age, the superjacent sedimentary deposits associated with erupted traps are found to be of the cretaceous and tertiary epochs.

The most remarkable feature of the geology of the south-eastern end of the island is the scooping, grooving, and scratching of the rocks by ice action. The dense felspathic trap is *ploughed* into furrows 6 to 8 inches deep, and from 6 to 18 inches wide. The sharp peaks of the erupted intruded rocks have been broken off, and the surface smoothed and polished as well as grooved and furrowed by glacial agencies, giving the appearance of rounded bosses to the numerous promontories and outlying islands which here mark and stud the coast line.

As might be looked for in a country so acted on by ice, the whole surface of the land is found in this locality to be covered by boulder drift and erratic blocks of various crystalline and other rocks sufficiently hard to bear attrition. Granites and granitoid rocks of every description are to be met with; trappean rocks, micaceous schists with garnets, breccias, and conglomerates.

From these granitic boulders and from the sandstones of the outlying islands valuable building material is obtained, some of the grey granites equalling in beauty and in closeness of crystalline texture the best granites of Aberdeen or Dartmoor.

The soils of Vancouver Island, derived from the clays and gravels of the drift that overspreads the country, and from the decomposition of the subjacent rocks, may be thus distinguished and described:—

1st. A poor gravelly soil, with a thin coating of vegetable mould, bearing large timber of a superior quality, coarse grass, and little underwood.

2nd. A calcareous loam of good quality, producing excellent crops of vegetables; very suitable for clover and other lime plants.

3rd. A rich dark brownish-black soil, or humus, resulting from the decay of vegetable matter, mixed in some localities with alluvium, of variable depth, and resting on a clay subsoil, overlying trap rock and concretionary limestone.

The poverty of the soil first described, is due to its inability to retain moisture; the second is always ready for cultivation; and the third only wants subsoil drainage to carry the heaviest possible crops of wheat and of other cereals.

The *Hydrography* of Vancouver Island has been, in all its bearings, fully detailed by Captain George Henry Richards, of the Royal Navy, in his admirable 'Sailing Directions.' Therein are shown the very remarkable peculiarities and irregularities of the tidal currents. In this place it will suffice to refer, as having an influence on climate, to the remarkably low temperature which characterises, all the year round, the ocean that washes the shores of this island.

This ocean is boreal in character, its temperature being kept low by Arctic currents which sweep down the coast, even to below the latitude of San Francisco, and by the quantity of melting snow discharged by numerous rivers and mountain torrents on the British Columbian coast. The influence of this low oceanic temperature is observable in the marine zoology, many of the shells having a boreal type.

Lines of soundings have demonstrated the existence of extensive banks on the western coast, which, abounding in fish, will one day prove of great value to the colony.

The climate of Vancouver, in the succession of its seasons and general thermal conditions, approximates closely to that of Great Britain, modified by special circumstances connected with its physical geography. Situated close to a continent the mountain-ranges of which are clothed or capped with perpetual snow, and surrounded by an ocean remarkable for its extremely low temperature, certain peculiarities present themselves to the notice of the climatologist; and these are well and specially marked in the south-east end of the island, owing to its proximity to the Olympian range of mountains in Washington territory. This range, running east and west, presents its northern aspect to Vancouver Island; and since, on this aspect, the snow remains on the mountain peaks all the year round, the winds which blow from this direction are necessarily cold and chilling. Other winds, blowing over the cold sea-water, also have this chilly feeling, and give the peculiarity to the climate, as far on in the year as the 21st of June, of a fine clear atmosphere with a bright sun, and cold winds, like a late spring in England.

The seasons in general take the following course:—After the gales with rain, which generally mark the period of the equinox, fine clear weather sets in, and continues till about the middle of November. At this period rain begins to fall continuously for days, and gales of wind are frequent on the coast. The barometer ranges from 29·50 to 30·10, and falls rapidly on the approach of a southerly gale. Rising gradually to 30·20 and 30·50, a northerly wind springs up, and three days of fine clear weather, with hoar-frost, generally follow. After the third day, the barometer slowly falls, and again the gale springs up, and the rains come down, to be succeeded, after a few days, by a rising glass and frosty weather, which, as the season advances, occasionally becomes intense, and is accompanied by hail and snow. The latter seldom lies for any length of time; the winters of 1852-53, 59-60, and 61-62, the last especially, being remarkably severe exceptions. These exceptional seasons occur in all climates, and here prove the rule that an open, wet winter characterises Vancouver Island.

There is a great amount of rain, but it is to be regretted that there is no register to show what the rainfall actually is.

The great quantity of uncleared and undrained land tends to make the spring later and colder than in England. The summer is drier, with a more scorching sun. Little or no rain falls from the middle of April till the Equinox, or the end of October. The prevailing winds during these summer months are from south-west to north-west, blowing freshly during the day, the nights tranquil and clear. Northerly winds occasionally prevail, and, blowing over the heated land, are, in the southern parts of the island, hot and dry.

The autumn of the American climate is finer than that of the European, and the fine weather (the Indian summer) extends further into the year. The winter months in ordinary seasons are much the same as in the west of England; in the severer and exceptional, more like the Midland Counties and east coast of Scotland. There are thus, as it were, two seasons, a wet and a dry. The rainfall, it may be noted, is greatest at night.

On the whole, the climate of Vancouver may be fairly described as very fine, healthy, and enjoyable; yet limited experience and partial observation lead to opposing and conflicting statements. The best and safest guide to the climatologist will be found in the statistics of Agriculture and of Medicine; having reference to the quantity and quality of produce, the nature and gravity of disease. To these points reference will be made further on, and, in the mean time, the following abstract from a meteorological register kept at Victoria in the year 1850, will show "what the weather is" in any ordinary year.

January, 1850.—Snow began to fall on the 5th. On the 24th there were 17 inches on the ground, which, however, was all gone by the 28th. For the month:—max. temp., 47°; min., 21° Fahr.

February.—Mild and open. On the 12th, gooseberry-buds were opening. Some hail, rain, and frost, towards the end of the month. Max. temp., 58°; min., 26° Fahr.

March.—Variable weather; slight snow-storms in early part, but so partial that, on the 2nd, early plants were coming into leaf in sheltered spots; native hemp was 3 inches high, elder-bush putting out leaves. On the 7th, catkins and palm-willow in full bloom. On the 29th, there was still snow on the ground, and buttercups in flower. Max. temp., 60°; min., 27° Fahr.

April.—High winds alternating with calms. Strawberries on the 13th, coming into bloom. Max. temp., 69°; min., 35° Fahr.

May.—15 fine clear days, 12 overcast, 4 rainy. On the 1st, plains covered with verdure; the twin-cup lily, heartsease, crowsfoot, jonquil, and many other flowers, in full bloom; kramass

flowering, spring wheat and peas rising, early potatoes above ground. On the 4th, campaniola and lupin coming into flower, wild cherry and service-berry coming into blossom, and wild vetch flowering in warm places. On the 6th, apple-tree in blossom, strawberries forming; on the 7th, potatoes planted in March and April coming up. 12th, early beans in bloom. 18th, wild rose coming into bloom. 25th, strawberries ripening. 31st, wild gooseberries ditto. Max. temp., 78°; min., 39° Fahr.

June.—23 fine clear days, 7 overcast and foggy. On the 14th, queen of the meadow and golden rod in bloom. 17th, potatoes flowering. Max. temp., 84°; min., 47° Fahr.

July.—22 fine clear days, 9 overcast. On the 11th, barberry and raspberries ripe. On the 17th, first double rose on Vancouver Island came into flower. Max. temp., 82°; min., 52° Fahr.

August.—26 fine clear days, 5 overcast. On the 16th, distant thunder, high wind. Max. temp., 79°; min., 53° Fahr.

September.—24 fine clear days, 6 overcast. On the 7th, heavy dews. Max. temp., 74°; min., 45° Fahr.

October.—20 fine clear days, 10 overcast. Max. temp., 70°; min., 38° Fahr.

November.—13 fine clear days, 14 overcast, 3 rainy. On the 19th, a heavy gale of wind, felt simultaneously along the whole coast. Max. temp., 55°; min., 32° Fahr.

December.—10 fine clear days 16 overcast, 4 rainy, 1 snowy. River frozen on the 4th; ice quickly broke up. Max. temp., 48°; min., 14½° Fahr.

There were thus, in the year 1850, 201 fine clear days, 97 overcast and foggy, 50 rainy, and 17 on which snow fell: these latter in the four first and two last months of the year. In the year 1860-61 there were 186 fine clear days, 97 rainy, 78 overcast and foggy, 4 snowy.

The experience of the last twenty years has shown that, at irregular periods of from five to seven years, winters of great severity may be expected. In 1846, 1852-53, 1859-60, and in 1861-62, the frost was intense, and the fall of snow heavy. In neither of the two former cases, however, was it in any way so severe as in the latter year.

On the 5th of January, 1862, the snow began to fall, and, with but one slight break in February, continued to fall heavily at intervals, lying on the ground until towards the middle of March. This severity was, however, followed by a summer and autumn of almost unexampled beauty, the fine weather, the "Indian summer," extending into the middle of December.

In ordinary seasons the Isothermal line of Vancouver Island would pass through the southern counties of England. Taking the average annual maximum temperature at London in June as

86°, the minimum as 22° Fahr. in January, the range will be 64°. In Vancouver, as shown by the abstract above given, the maximum temperature for the year was 84° in June, the minimum 14½°, which would give a range of 69½° Fahr. But this fall to 14½° for a day or two in December must be looked on as exceptional, and the usual minimum standard of 22° Fahr. accepted; this gives a range of 62° Fahr., almost the same as that of London.

The register kept on shore has been taken in preference to one kept on board, in making the above comparison, the conditions being more equal; for it must be borne in mind that, strictly speaking, there are two well-marked climates in Vancouver, viz., a littoral and an inland climate: the former, due to the causes already mentioned, cold arctic currents, &c. &c., has a lower range, as shown by registers kept on board ship.

The whole area of Vancouver Island comprises about twelve million acres, the greater proportion of which is mountain and barren rock. There may be in all, if the land were cleared, one million acres available for the agriculturist and stock-breeder. The country is divided into districts, some of which are as yet unsurveyed.

The following, beginning at the south-eastern end of the island, are surveyed:—Sooke, Metchosin, Esquimalt, Victoria, Lake, North and South Saanich, Cowitchin, Comiaken, Quamichen, Shawnigan, Somenos, Sallas Island, Nanaimo, Cedar, Mountain, and Cranberry.

The unsurveyed districts are:—Highland, Chemainus, Salt Spring, Barclay Sound, Nootka Sound, Fort Rupert, Comux, small islands and dependencies, San Juan, Oyster Bay, James Island, and Koskemo.

Following these districts as herein set down, it will be interesting briefly to set forth their special characteristics and capabilities.

Of those surveyed, beginning at the south-eastern extremity of the island, Sooke will first claim our attention, and it will be found to possess some features of considerable importance. Situated advantageously and conveniently on the straits of Juan de Fuca, but for difficulties connected with the approach from seaward to its magnificent inner harbour, this district must have long ago assumed a position commercially of high importance. There is reason to believe that these difficulties may in time be overcome, and by the aid of steam-tugs vessels may be safely anchored in a harbour safe and landlocked. The formation, geologically, is an axis of trappean rock, having, resting on its north-western flank, clay-slates and micaceous schists; on its southern and south-eastern, a sedimentary deposit of stratified sandstones, shales, and seams of coal. The agricultural resources are limited. Such open land as exists is of excellent quality, bearing very heavy crops, and a con-

siderable quantity will become available for farming purposes, as the land is cleared of the heavy and very valuable timber that now covers it.

The highest elevation is about 1500 feet. All over the surrounding broken country there is excellent grazing, during seven months of the year, the wild vetch growing luxuriantly to a height of three or four feet. On Sooke River there are many fine, though limited valleys, all bearing magnificent timber, cedar especially. One of these valleys is computed by the surveyor to contain 2000 acres. The whole district contains 10,201 acres.

The carboniferous deposit has been proved by "bore" to the depth of 84 feet, and two thin seams of coal have been passed through. A promising vein of copper has been found, and is now being worked.

Metchosin District contains 11,897 acres. There is some fine grazing-land, but little prairie, heavy timber covering the whole. The pines are very fine, but far back from the sea. The whole district is very beautiful and salubrious, well sheltered, with a dry gravelly soil, adorned with Druid-like groves of oak and solemn-looking clumps of pine, intermingled with the varied foliage of a thick shrubby undergrowth.

Esquimalt District contains 12,426 acres. The soil, generally, is poor in quality, covered with scrubby timber, a great deal of rock, and many lakes and large swamps. The great importance of this district consists in its excellent harbour. This is a safe and excellent anchorage for ships of any size, and with the aid of the light on Fisgard Island may be entered at any time with great facility. The holding-ground is good,—a tenacious blue clay. The extent of this fine harbour is about three miles by two, with an average depth throughout of from 6 to 8 fathoms. Great natural advantages and facilities exist for the extension of townships and the formation of docks, and there can be little doubt but that here will be established the head-quarters of the royal naval force in the Pacific. Amongst other projects connected with the development of the colony, is that of a railroad to connect this with the neighbouring district and town of Victoria.

The village or hamlet of Esquimalt consists of a few scattered houses, chiefly hotels, dependent for support on the mail-steamers and ships of the royal navy there stationed.

Victoria District contains 16,679 acres. Clay subsoils characterise this district, over which is spread a coating of vegetable mould—humus. The lands reclaimed from the swamps are very rich and fertile. The whole surface is undulating: in most places thickly timbered, in the neighbourhood of Victoria clear, and sweeping along the coast-line as fertile grassy pastures. Traps,

clay-slates, and limestones enter into the geological formation of this as well as of Esquimalt District.

The Harbour of Victoria has been thus described by Captain Richards:—"Victoria Harbour is a little more than 2 miles eastward of Esquimalt, with its entrance between McLauchlin and Ogden Points. The entrance is shoaly, narrow, and intricate; and with south-west or south-east gales a heavy rolling swell sets on the coast, which renders the anchorage unsafe outside; while vessels of burden cannot run in for shelter unless at or very near high water. Vessels drawing 14 or 15 feet of water may, under ordinary circumstances, enter at such times of tide; and ships drawing 17 feet have entered, though only at the top of spring-tides.

"The channel is buoyed, and every means has been taken to make the entrance as safe as possible, and doubtless the harbour is susceptible of improvement by artificial means."

Originally selected by the Honourable Hudson Bay Company as the depôt of their establishments, in consequence of the quantity of good clear land in the neighbourhood, and the harbour being sufficiently spacious for the few small vessels in their employ, it was, as a site in these respects, admirably chosen; but it has been a fatal mistake, at a later date, not to have adopted Esquimalt as the commercial port. The inlet of the sea which forms the harbour of Victoria runs northerly for some miles, with an average breadth of a few hundred yards, and at one point is separated by but a narrow neck of land from Esquimalt Harbour. Through this it has been proposed to cut a canal and thus connect the two harbours.

The town of Victoria, situated on the eastern side of the harbour already described, has sprung into existence during the last six or seven years. Originally the site, as already mentioned, of a trading establishment or fort belonging to the Honourable Hudson Bay Company, it may, under the influence of the neighbouring gold regions and the great natural advantages of its position, become a place of great importance, not only to British colonists but to those also in American territory along the whole seaboard of the North Pacific.

Adjoining Victoria is the Lake District, containing 14,048 acres. The land is of the same character as that of Victoria. Numerous fine lakes give a name to the district.

The districts of North and South Saanich contain respectively 10,767 and 12,216 acres. These districts contain some of the best agricultural land in Vancouver. There are indications of copper, and a coal-seam of inferior quality crops out on the eastern coast. The land not taken up or pre-empted is worthless; some of it may be useful for grazing.

Following the coast-line north and west, we come to the fertile valley of Cowitchin, with the adjoining districts of Comiaken, Quamichen, Shawnigan, Sominos, and Chemainus. These, with the exception of the last, as yet unsurveyed, give an aggregate of 54,836 acres. These important districts afford a good type of the lands fitted for agricultural purposes and require a special notice, seeing that they give the general characteristics of the fertile valleys that fringe the eastern coast.

The Cowitchin valley, about 15 miles wide, upon the sea-coast, narrows rapidly in a westerly direction to the width of about six. Bounded by high ranges of mountains composed of calcareous rocks these ranges form almost impassable barriers to the valley north and south. To the disintegration and the decomposition of these rocks, all highly charged with the carbonate of lime, is due the distinctive character of the soils throughout Cowitchin Valley. In their nature they are essentially calcareous; for while the other constituents occur in different degrees in this locality, carbonate of lime almost invariably predominates; and of this soil there is usually a good depth of from 2 to 3 feet, resting on a sufficiently retentive subsoil of blue clay or gravel.

The earths, chiefly light, very porous, and composed of due proportions of clay, sand, carbonate of lime, and humus, are well constituted for absorbing and retaining moisture; and the general colour, from brown to black, with the entire absence of chalky or white earths, would likewise indicate a favourable soil for receiving and retaining heat. Samples taken from the Sominos plains were found by experiment to absorb water sufficient to increase the volume of soil from one-eighth to one-fifth of its whole bulk.

Much of the soil along the Cowitchin River is a clay loam of a brown colour, and is an excellent soil for wheat, beans, turnips, and red clover. The soils on the more open lands are either gravelly, or sandy and gravelly loams, eligible for barley, oats, rye, buckwheat, beans, peas, the root and leaf crops, potatoes, turnips, carrots, and the usual garden vegetables.

The loamy soils, everywhere possessing a depth of 2 or 3 feet and containing a large proportion of the calcareous principle, are especially eligible for fruit culture. Apples, pears, cherries, and, indeed, all our hardy garden fruits, might be grown to perfection. It is believed that the filbert and hardy grape-vine could be easily and successfully cultivated; and among the native fruits the blackberry, mulberry, raspberry, strawberry, gooseberry, currant, and high bush-cranberry would require but little pains and culture to produce luxuriantly. The strawberry grows wild on the prairie lands, nearly of the same size as the garden-fruit.

The species and varieties of plants growing in these districts are

very numerous. On the meadow-lands are the following: white pea, wild bean, ground-nut, a species of white clover, reed meadow-grass, bent spear-grass, wild oat, wild Timothy, sweet grass, cowslip, crowfoot, winter cress, partridge-berry, wild sunflower, marigold, wild lettuce, nettles, wild angelica, wild lily, brown-leaved rush.

The forest growth consists of oak, various species of pine, red or swamp maple, elder, trailing arbutus, crab-apple, hazel, red elder, willow, balsam, poplar, cedar, barberry, wild red cherry, blackberry, yellow plum, chokecherry; black, red, and white raspberry; prickly purple raspberry, prickly gooseberry, swamp gooseberry, several kinds of currants, bearberries, mooseberry, snowberry, bilberry, cranberry, red and white mulberry.

The geological formation is very important, containing as it does valuable building material, as sandstones and limestones, trap rocks, and metalliferous slates.

The region abounds in lakes and good-sized streams, several good falls existing at various points sufficient to meet the wants of a large population, as regards both grist and saw mills.

Sallas Island contains 3448 acres.

The district of Nanaimo has a very important geographical position, and possesses a very interesting, and economically valuable, geological history. Its whole area, comprising 48,375 acres, is subdivided into the Mountain, Cranberry, Cedar, and Delta of Nanaimo, Districts, each so named from its respective special characteristic. The general character of the whole is mountainous, the soil poor and sandy. Good land, available for agricultural purposes, is to be found, however, on the alluvial flats forming the delta of the Nanaimo River, and in the lacustrine deposits of the swampy hollows which mark the site of a chain of lakes stretching westerly inland along the Millstream River.

The working of the valuable coal-field of Nanaimo has been carried on very irregularly; and only of late have any steps been taken on a scale commensurate with its importance. The value of the new seam now being worked has been fully recognised, and the demand increases rapidly.

Rising behind the settlement of Nanaimo, is Mount Benson, a trappean mass, which, attaining the height of 4000 feet, sends, in a curvilinear form, spurs running north-east and south-west, describing the segment of a circle. Resting on these spurs, dipping south-east and easterly, are the upturned edges of these sedimentary rocks, the whole much disturbed, not only by numerous faults, but by twistings laterally, heaves and slips of strata.

On the Chase River, which flows along the south-eastern spur, there are three outcrops of coal, 3 feet 10 inches, 5 feet, and 2 feet

6 inches respectively. The first or Douglas seam, now being worked, furnishes the best coal as yet taken out, and is reported as most favourable, both by analytic chemists and practical men.* The present working is in a proved area of 600,000 square yards. A shaft, 60 fathoms deep, reaches the coal, which yields 1 ton to the square yard, increasing in the dip, so that, at a fair computation, 800,000 to 1,000,000 tons of coal may be calculated on from this seam alone. If the other underlying 5 feet and 2 feet 6 inches seams can be conveniently reached and worked, it may be fairly assumed that in this one block 3,000,000 tons of coal are available.

The Douglas Seam was first opened in August, 1852; and the work was continued at various points, by the Honourable Hudson Bay Company, up to the end of 1862. During that period, working very irregularly, they took out 63,154 tons of coal, which, at an average of 8 dollars per ton, gives a total value of 101,046*l.* The price is now reduced to 6 dollars at the pit's mouth; but a much greater quantity is raised, and extensive explorations, to develop still further the value of the property they hold, are now being made by the Vancouver Island Coal Company. In the very first year of their operations they have raised 22,000 tons, the demand increasing rapidly in the San Francisco market. Vessels of large tonnage (one of 1500 tons) now frequent the port, where formerly, with the exception of these ships, schooners of small tonnage were the largest craft.

The remarkable progress already made in the colonies of British Columbia and Vancouver Island—a progress achieved under very great difficulties, and with much discouragement—shows, in some degree, of what these countries are capable. Their great importance, politically, is acknowledged by statesmen; their capabilities, commercially, are proved by merchants and bankers.

The important step must soon be taken, of connecting, by railway, these colonies with the Canadas, and thence, by ocean steamship, with the mother country. The exit of this route from the American Continent must be at some point immediately opposite to Nanaimo. When Nanaimo shall be a port of entry, as soon it must be, there will be established an ocean terminus. Across the ridge, behind Nanaimo, a trail of about 13 miles, leads to the head of the Alberni Canal on the west coast, whence,

* The excellent quality of this coal is now indisputable. It yields a hard, lustrous, fissured, and little swollen coke. It contains little hydroscopic moisture, and burns well, with a steady heat and a brilliant flame—spec. grav. 1·317. Its steaming properties have been very favourably reported on by the engineers of H. M. ships and other vessels on the coast. In stowage, Welsh coal has the advantage over it of about 12 per cent.; Newcastle (English) 2 per cent.; but with most north country coal, and all Scotch, the advantage would be in favour of the Nanaimo coal (Douglas seam) by 2 per cent.

at all times, steam-vessels may have free access to the North Pacific.

Nanaimo settlement is prettily situated. The site of a town is now being laid out; the soil, a sandy loam, is dry and healthy, being suitable for gardens and orchards.

The Valley of the Comux, another fine agricultural district, as yet unsurveyed, lies north of Nanaimo. Its special characteristic is the existence of successive terraces of open prairie-like land, marking separate periods of slow upheaval. But, partially explored, no further special account of its capabilities can be given than that, in its general character, it closely resembles the Cowitchin Valley, the districts and delta of which have been already fully described.

Proceeding north and west, passing Valdes Island, and through Johnstone Straits, an excellent route for steamers, abounding in good anchorages, the extreme north-west point of the island is reached, where Fort Rupert, a trading station of the Hudson Bay Company, is established. Here the carboniferous formation is again met with; but there have been fewer disturbances than at Nanaimo; the strata lie almost horizontally. The land is unsurveyed.

The western coast of the island, commencing at Cape Scott, possesses a great number of remarkable and interesting features. From this cape a group of islands extends westerly for 40 miles; it is composed of three large and several smaller ones, which are high, conical and bare. They are called the Nine-pin Rocks. Triangle Island, the westernmost of the group, is a very remarkable island, 1000 feet in height, having a curious notch on the summit. Between the Cape and the nearest islands there is a good clear passage of 2 or 3 miles wide.

Immediately south of Cape Scott is Quatsino, an important inlet, stretching across the island nearly to Fort Rupert, on the eastern side. Coal has been found, and a Company formed for working it. This, with other resources, copper and fine timber, and so forth, will make this a place of importance.

Woody Point separates Quatsino from Kyuquot, a district which extends to Nootka Sound. This latter is a deep inlet, possessing few harbours or good anchorages. The small harbour or cove at its entrance is famous as the scene of the Spanish occupation dispute, and an anchorage nearly opposite has a special interest as having been Cook's first.

Clayoquot Sound differs from all the other inlets of this coast; its entrance being full of banks and shoals of sand and gravel, instead of a deep muddy bottom. Here, also, is the gneisso-granitic axis of elevation already alluded to, having associated therewith micaceous, hornblendic, and coarse-framed quartzose

rocks, intruded trappean dykes, and quartz veins, indicating a region most probably rich in mineral wealth.

Barclay Sound, situated close to the entrance of the Straits of Fuca, has a very important geographical position. A somewhat open sound, studded with numerous islands, it possesses several good anchorages, one within very convenient distance of the entrance of Cape Beale, on which a lighthouse will ultimately be erected. At the upper end of the sound a very remarkable cleft in the mountain-range, known as the Alberni Canal, leads, after a course of 25 miles, to a level country of considerable extent, heavily timbered, with the finest specimens of pine and other woods perhaps anywhere to be seen. Through this flows a stream, discharging the waters of a chain of lakes, which penetrates northerly into the interior. The anchorage is good, and the whole sound, canal, and harbour, can nowhere be excelled in the facilities they afford for the protection and defence of commerce. Its connexion with Nanaimo has been adverted to.

Such is the general character of Barclay Sound. Its political and commercial importance merit a more special detail. Passing through the Sound, leaving behind Ship Island, with its three big pine-trees, "Fore, Main, and Mizen masts," past the numerous bristling islets, the Alberni Canal is entered through the Devil's Gap, the rocky sides of which run so sheer down into the deep water that the largest ship could make fast alongside to the pine-trees, the shores, on either hand, not being more than a pistol-shot apart. The fleets of the Pacific might ride in the Sound, or, for the matter of room, inside the Devil's Gap. A more secure place for an arsenal than Alberni, if the Devil's Gap had one or two heavy guns mounted, could not be found on the Pacific Coast. Its convenience also for refitting ships is great; timber for masting or repairing purposes being plentiful. Plenty of fair farming land, and fresh water in abundance. Possibly, the fact that the money of the colony is chiefly invested at Victoria, decides the question at present in favour of Esquimalt as the head-quarters of the Royal Navy; but in case of a war in the Pacific, there can be little doubt but that Alberni and Barclay Sound, from the commanding position of the latter, at the mouth of the Straits of Fuca, will be found an invaluable base of operations for our navy in that part of the world.

The high and rocky sides of the Alberni Canal end on the right hand with a bold outstanding rock, known from its colour as Copper Mountain; and from it the canal opens into a wide oval-shaped basin, at the far end of which the buildings of the Alberni settlement are seen. The River Somass runs into this oval-shaped basin, and at the junction there are considerable flats of good meadow-land.

The Alberni settlement was founded in 1859-60, by the London firm of Anderson, Thomson, and Co., who had previously imported the Douglas pine into Europe, and had thus become acquainted with the resources of the colony in respect to its timber. Several good-sized schooners have been built at Alberni, and others are now building. Fish curing has been carried on to some extent; the abundance of salmon and cod in the neighbourhood making this a favourable place for such operations. A coasting trade is carried on by agents of the Company with the Indians for furs, oil, fish, and so forth.

Of San Juan it may be sufficient to say that its importance as a military post has been much exaggerated. There is, it is true, some fine arable and grazing land on this island, now famous in colonial history. Its position has been supposed to be such as to confer on that military power which should occupy it, the command of both the Fraser River and of Victoria Harbour. But this is a fallacy; it commands neither; more especially since the almost exclusive introduction of steam-vessels and the discovery of the Rosario Channel.

A great portion of the area of Vancouver's Island, which is neither sold, pre-empted, nor reserved (7,598,215 acres) is unavailable land, perhaps four-fifths of the whole being barren rock. Heavy and very valuable timber now covers many fine districts, which, as they become cleared, will become available for cultivation. The expense of clearing is at present great, from 6*l.* to 14*l.* per acre. The richer alluvial soils, bearing willow, poplar, and alder, are cheaply and readily cleared by fire. In the agricultural districts described, there is, however, enough for farming purposes on a small scale, into which the farmer can at once put his plough; the clearing of the timber from the land keeping pace with the wants of a farm, for outbuildings, and other purposes.

Farming operations are conducted on the same rotation four-course system as in England. The crops generally raised are wheat, barley, oats, and peas. The green crops are, turnips, mangel-wurzel, vetches, potatoes, and all kinds of vegetables. Nowhere does the potato flourish more or attain a better flavour.

The average production of wheat is 25 to 30 bushels per acre, 64 lbs. to the bushel; of oats, 40 bushels per acre, weight 36 to 46 lbs.; potatoes, 200 bushels per acre. Barley, in proportion to the cultivation of the land, from 24 up to 40 bushels per acre. Fruit culture has proved a valuable and paying branch of industry.

The experiment of the free port of Victoria has been most successful in establishing and developing commercial prosperity: suitable to the first conditions, it may be doubted, however, if it can always be maintained. The revenue from the want of customs is small, about 25,000*l.* annually; and taxation presses

heavily on one portion of the community alone; for the native population, numbering about 18,000, pay no taxes whatever, and in some imported articles are large purchasers and consumers. A capitation tax, levied by the chiefs, must one day be laid on to relieve, in some degree, the colonists, who now pay all; or Customs duties must be exacted.

The salubrity of the climate is indisputable. It is a climate that a man can be out-of-doors in every day of the year. There are no epidemic diseases. Infantile epidemics have been introduced, and lately smallpox has committed great ravages amongst the natives. Under the influence of intemperance and other vices, the native population is gradually disappearing.

The sportsman in Vancouver will find abundant use for both rod and gun; and, as a hunter, he may distinguish himself in the forest; the puma, the bear, and the wolf being worthy of his prowess. There are two kinds of grouse, and snipe and wild fowl in great variety and number. Two kinds of deer are found, the larger, popularly known as the elk, reaching the weight and size of an ordinary bullock. Salmon abound, but will not rise to the fly; splendid trout-fishing may, however, be had in every stream and lake.

Such, briefly sketched, are some of the capabilities and resources of the colony of Vancouver Island. It is evident that her geographical position gives her commercially, and, in a military point of view, strategically, the command of the North Pacific.

Her bold and rugged shores have few hidden dangers; and the seaman, knowing that he has safe and sure guides, can, in the darkest night, as in the open day, run for his port. Carrying on a trade with Australia, Vancouver has already established relations with three gold-producing countries. Her importance will soon be felt on the distant shores of Russian Asia, Japan, and in the China Seas; and, when the wealth of the Pacific Islands comes to be developed, the free ports of Vancouver will be emporiums of their trade for the supply of North-West America.

In her soils, Vancouver, as has been fully shown, possesses all the qualifications necessary for raising food for man and beast; and these soils are by no means so limited in extent or inferior in quality, as to preclude the possibility of the island being a grain-producing colony. The mineral resources of Vancouver may be summed up as coal, copper, and possibly silver and gold. The latter is widely spread over the country in the drift clays and gravels; and of late, auriferous quartz has been found in the neighbourhood of Victoria, leading to a great pre-emption and occupation of land.

The following will give some idea of the resources of Vancouver Island in woods of economic value. The list is according to popular names. White fir, spruce fir, balsam fir, white pine, yellow pine,

cedar, vine-leaved maple, broad-leaved maple, alder, willow, poplar, yew, logwood, cotton-wood, crab-apple, service-tree, hemlock, oak, arbutus, yellow cypress, &c. Of all these, the white fir or Douglas pine (*Abies Douglasii*), is the most important; it grows to an enormous size, and is one of the best woods for spars known. This is *the* tree of the colony, and it is the commonest on the north-west coast. A specimen, by no means a large one, may be seen erected as a flagstaff at Kew Gardens. In some instances this tree has been known "*to square*" 45 inches for 90 feet. The cedars are very fine, with an average diameter of 6 to 7 feet. One has been measured of 14 feet. They are found in great abundance both at Sooke and Nanaimo. The details given in the description of the Alberni Settlement show how these products are utilised, and how valuable they are commercially.

The Fisheries will one day prove a source of great wealth to the colony. Extensive banks lie off the south-western extremity of the island, these lying between the parallels of 48° and 49 have their seaward boundaries 32 miles off shore.

This, the outer edge of the bank, is rather steep, falling from 90 to 150 fathoms, and then no bottom with an ordinary line. Other banks exist in Puget Sound and in the Strait of Georgia, off Borrardy Inlet. All of them are well stocked with fish, especially cod, the true *gadus*, an excellent fish of its family, small but very good. In the neighbouring streams and lakes, and surrounding seas, are salmon (five species), trout (many species), herring, haddock, smelt, halibut, sturgeon, whiting, several species of rock fish, and sea perch, eulachon, &c.

A company is being formed to prosecute this branch of industry, and with every prospect of success, an extensive market existing along the whole North and South Pacific coasts. The attempt has been made before, but failed through injudicious selection of fish. In the case of the salmon, there are only two species that are really good; the others are coarse and oily, and having been cured and mixed with the better kinds, have given the whole a bad name.

Let it be borne in mind that such advantages as the colony possesses are *prospective*. Politically, these colonies are of the first importance as a military outpost, they are absolutely necessary for our commerce and supremacy in the Pacific. Dockyards must be established to refit and repair the ships that protect that commerce and maintain that supremacy. At present, for such repairs, recourse must be had to a foreign port.

The difficulties and drawbacks of the colony are the price and expense attending the voyage thither, and the want of direct postal communication. At present all letters pass though the hands of the officials of the United States post-offices.

For a long time the expense of the short sea-voyage, *viâ* Panama, and the length of the long sea-voyage, *viâ* Cape Horn, will prevent the population really wanted in the country finding its way there from England. As an inducement, free grants of land ought to be given. The probability is that the class of small farmers required will be supplied from amongst the hardy settlers of Canada. These men are eminently qualified for developing and making the most of the resources of both British Columbia and Vancouver Island.

The present population of Victoria and of Vancouver Island generally numbers probably 6000; but there is, besides, a large floating population consisting chiefly of miners.

X.—*Remarks upon the Geography and Natural Capabilities of British Columbia, and the Condition of its principal Gold-Fields.*

By Lieutenant H. S. PALMER, R.E.

Read, March 14, 1864.

THE discovery of gold in the extreme west of British North America, in the year 1858, was destined to prove an event of more than passing importance in the history of modern colonial progress. Upwards of 200,000 square miles of savage territory were at once erected into the colony of British Columbia, and the new region became hastily peopled by hordes of eager gold-seekers from the neighbouring states. The shallow "bars" of the Fraser and Thompson Rivers soon ceased to be profitable; but step by step, with varying success, yet unabating vigour, the alluvial gold was traced upwards to its parent sources in the hills, and, in 1861, three years of patient toil were rewarded by the discovery of the now famous gold-fields of Cariboo. The productiveness of these new mines has, during the last two years, been so great as to place them in the first rank of modern gold discoveries; and, indeed, a comparison of their returns with those of the most notorious districts in California and Australia encourages the belief that the auriferous riches of Cariboo are the greatest hitherto discovered. While the gold-miner's incursions have been thus rapid and extensive, civilization and enterprise have not been far behind him, and the young colony now attracts attention by its various commercial and agricultural, as well as its mineral, advantages. During the last five years, the writer has had frequent opportunities of travelling somewhat extensively in British Columbia, and the object of this communication is to describe, with as much detail as a short paper will admit of, its physical geography and natural capabilities, and the condition of its principal gold-fields.